



YOUR KINDLE NOTES FOR:

## Governing the Commons: The Evolution of Institutions for Collective Action (Canto Classics)

by Elinor Ostrom

Free Kindle instant preview: <https://a.co/f3voRnE>

### 399 Highlights

---

Highlight (Yellow) | Page 2

“the tragedy of the commons” has come to symbolize the degradation of the environment to be expected whenever many individuals use a scarce resource in common.

---

Highlight (Yellow) | Page 6

Whenever one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others.

---

Highlight (Yellow) | Page 7

Not all users of natural resources are similarly incapable of changing their constraints.

---

Highlight (Yellow) | Page 7

how to enhance the capabilities of those involved to change the constraining rules of the game to lead to outcomes other than remorseless tragedies.

---

Highlight (Yellow) | Page 21

The participants may simply have no capacity to communicate with one another, no way to develop trust, and no sense that they must share a common future.

---

Highlight (Yellow) | Page 21

powerful individuals who stand to gain from the current situation, while others lose, may block efforts by the less powerful to change the rules of the game.

---

Highlight (Yellow) | Page 21

Some participants do not have the autonomy to change their own institutional structures and are prevented from making constructive changes by external authorities

---

Highlight (Yellow) | Page 21

external changes may sweep rapidly over a group, giving them insufficient time to adjust their internal structures

---

Highlight (Yellow) | Page 21

Some groups suffer from perverse incentive systems that are themselves the results of policies pursued by central authorities.

---

Highlight (Yellow) | Page 27

coping with free-riding, solving commitment problems, arranging for the supply of new institutions, and monitoring individual compliance with sets of rules.

---

Highlight (Yellow) | Page 29

increase the initial likelihood of self-organization, (2) enhance the capabilities of individuals to continue self-organized efforts over time, or (3) exceed the capacity of self-organization to solve CPR problems without external assistance of some form.

---

Highlight (Yellow) | Page 30

As long as the average rate of withdrawal does not exceed the average rate of replenishment, a renewable resource is sustained over time.

---

Highlight (Yellow) | Page 34

Uncertainties stemming from lack of knowledge may be reduced over time as a result of skillful pooling and blending of scientific knowledge and local time-and-place knowledge.

---

Highlight (Yellow) | Page 34

Uncertainty reduction is costly and never fully accomplished.

---

Highlight (Yellow) | Page 36

The contingent strategy that has been the object of the most scholarly attention is tit for tat in a two-person game in which an individual adopts a cooperative action in the first round and then mimics the action of the opponent in future rounds

---

Highlight (Yellow) | Page 38

In complex situations involving unstructured problems, assuming complete preference functions of any shape is not meaningful. The most one can say is that the individuals in such situations are engaged in a trial-and-error

effort to learn more about the results of their actions so that they can evaluate benefits and costs more effectively over time.

---

Highlight (Yellow) | Page 38

Popper's advice to make the rationality principle "an almost empty principle"

---

Highlight (Yellow) | Page 39

At the most general level, the problem facing CPR appropriators is one of organizing: how to change the situation from one in which appropriators act independently to one in which they adopt coordinated strategies to obtain higher joint benefits or reduce their joint harm.

---

Highlight (Yellow) | Page 39

That does not, necessarily mean creating an organization.

---

Highlight (Yellow) | Page 39

Making the switch, however, from independent to co-ordinated or collective action is a nontrivial problem.

---

Highlight (Yellow) | Page 42

Because supplying a new set of rules is the equivalent of providing another public good, the problem faced by a set of principals is that obtaining these new rules is a second-order collective dilemma.

---

Highlight (Yellow) | Page 43

establishing trust and establishing a sense of community are, in Bates's view, mechanisms for solving the problem of supplying new institutions.

---

Highlight (Yellow) | Page 44

the choice at each decision time subsequent to the agreement can be thought of as the choice between complying to a set of rules,  $C_t$  or breaking the set of rules in some fashion,  $B_t$ . On many occasions,  $B_t$  will generate a higher immediate return for the appropriator than will  $C_t$ , unless  $B_t$  is detected and a sanction,  $S$ , is imposed that makes  $C_t > B_t - S$ .

---

Highlight (Yellow) | Page 45

Unless the monitoring problem can be solved, credible commitments cannot be made.

---

Highlight (Yellow) | Page 45

the usual theoretical prediction is that they will not do so.

---

Highlight (Yellow) | Page 47

When appropriators face appropriation problems, they are concerned with the effects that various methods of allocating a fixed, or time-independent, quantity of resource units will have on the net return obtained by the appropriators.

---

Highlight (Yellow) | Page 47

Provision problems concern the effects of various ways of assigning responsibility for building, restoring, or maintaining the resource system over time, as well as the well-being of the appropriators.

---

Highlight (Yellow) | Page 47

Appropriation problems are concerned with the allocation of the flow; provision problems are concerned with the stock. Appropriation problems are time-independent; provision problems are time-dependent.

---

Highlight (Yellow) | Page 47

the solutions to one problem must be congruent with solutions to the other.

---

Highlight (Yellow) | Page 50

Analysis of technological changes has proved to be far more difficult than analysis of production and consumption decisions within a fixed technology

---

Highlight (Yellow) | Page 50

Analysis of institutional change is also far more difficult than analysis of operational decisions within a fixed set of rules.

---

Highlight (Yellow) | Page 51

One should not talk about a “rule” unless most people whose strategies are affected by it know of its existence and expect others to monitor behavior and to sanction nonconformance.

---

Highlight (Yellow) | Page 51

All rules are nested in another set of rules that define how the first set of rules can be changed.

---

Highlight (Yellow) | Page 52

Operational rules directly affect the day-to-day decisions made by appropriators concerning when, where, and how to withdraw resource units, who should monitor the actions of others and how, what information must be exchanged or withheld, and what rewards or sanctions will be assigned to different combinations of actions and outcomes.

---

Highlight (Yellow) | Page 52

Collective-choice rules indirectly affect operational choices. These are the rules that are used by appropriators, their officials, or external authorities in making policies – the operational rules – about how a CPR should be managed.

---

Highlight (Yellow) | Page 52

Constitutional-choice rules affect operational activities and results through their effects in determining who is eligible and determining the specific rules to be used in crafting the set of collective-choice rules that in turn affect the set of operational rules.

---

Highlight (Yellow) | Page 56

They solved their problems the way that most individuals solve difficult and complex problems: as well as they were able, given the problems involved, the information they had, the tools they had to work with, the costs of various known options, and the resources at hand.

---

Highlight (Yellow) | Page 58

“an institution as ‘essentially’ in equilibrium if changes transpired according to an ex ante plan (and hence part of the original institution) for institutional change.”

---

Highlight (Yellow) | Page 61

One cannot view communal property in these settings as the primordial remains of earlier institutions evolved in a land of plenty.

---

Highlight (Yellow) | Page 68

“It was considered perfectly appropriate for the detective to demand cash and saké from violators and to use that as their own entertainment cache”

---

Highlight (Yellow) | Page 68

The most serious sanctions that could be and occasionally were imposed involved complete ostracism or ultimately banishment from the village.

---

Highlight (Yellow) | Page 69

it is not necessary for regulation of the commons to be imposed coercively from the outside”

---

Highlight (Yellow) | Page 73

no irrigator can tell exactly when his turn will come, because that depends on the volume of water in the canal and the quantity needed by those ahead of him.

---

Highlight (Yellow) | Page 73

each irrigator knows that he can take as much water as he needs when his turn eventually comes.

---

Highlight (Yellow) | Page 73

In periods of extraordinary drought, these procedures are modified so that farms whose crops are in the most need of water are given priority over farms whose crops require less water.

---

Highlight (Yellow) | Page 74

While waiting, it is relatively easy to watch what those ahead of him are doing and watch the ditch-riders, whom he is paying.

---

Highlight (Yellow) | Page 74

The ditch-riders patrol the canals regularly and are watched over by the syndic, who can lose respect, and his job, if the allocation of water is not handled fairly and according to the farmers' rules.

---

Highlight (Yellow) | Page 74

there is considerable potential for violence among irrigators and between irrigators and their agents.

---

Highlight (Yellow) | Page 75

variable, depending on the gravity of the offense, on general economic conditions, and probably on the individual's ability to pay"

---

Highlight (Yellow) | Page 75

some flexibility into the relatively rigid rotation systems.

---

Highlight (Yellow) | Page 76

Assessing harsh punishment to someone who usually follows the rules, but in one instance errs in the face of a desperate situation, can engender considerable antagonism and resentment

---

Highlight (Yellow) | Page 76

each farmer knows exactly when and for how long he may obtain water, but he does not know exactly how much water may be available at that time.

---

Highlight (Yellow) | Page 76

Each farmer is more motivated to economize on the use of water within his own fields because he must make the decision how to allocate a limited timeslice of water to his own fields.

---

Highlight (Yellow) | Page 76

When extraordinary low-water conditions are in effect, the officials of each community post a new schedule for each rotation of the season – approximately every two weeks – indicating which crops will be given precedence and the schedule and special rules to be followed for the next rotation period.

---

Highlight (Yellow) | Page 77

The guards patrol the canal and report any violations of the ordinances they observe; act as witnesses where one farmer charges another with a violation or themselves bring charges against farmers; and assist in the distribution of water, frequently opening and closing the principal canal checks and the turnout gate of the principal laterals.

---

Highlight (Yellow) | Page 82

central role given to small-scale communities of irrigators who determine their own rules, choose their own officials, guard their own systems, and maintain their own canals.

---

Highlight (Yellow) | Page 82

The system was thus developed as a mode of acquiring long-term use rights to land and the water to irrigate it without prior accumulation of monetary assets.

---

Highlight (Yellow) | Page 83

incentives for those in leadership positions to try to get water to the tail end of the system.

---

Highlight (Yellow) | Page 86

two months of work supplied without direct monetary payment.

---

Highlight (Yellow) | Page 87

The members of the federation perceive the allocation of water to conform to legitimate formulas that they have themselves devised, rather than to formulas devised by external experts.

---

Highlight (Yellow) | Page 88

when external experts, working without the participation of the irrigators, have designed systems with the primary aim of achieving technical efficiency, they frequently have failed to achieve either the hoped-for technical efficiency or the level of organized action required to allocate water in a regular fashion or to maintain the physical system itself.

Highlight (Yellow) | Page 88

Whereas the construction of physical works tends to reduce the level of uncertainty, it tends to increase the level of complexity in these systems.

Highlight (Yellow) | Page 88

the populations in these locations have remained stable over long periods of time. Individuals have shared a past and expect to share a future.

Highlight (Yellow) | Page 88

maintain their reputations as reliable members of the community.

Highlight (Yellow) | Page 88

If costly investments in provision are made at one point in time, the proprietors – or their families – are likely to reap the benefits.

Highlight (Yellow) | Page 88

Extensive norms have evolved in all of these settings that narrowly define “proper” behavior. Many of these norms make it feasible for individuals to live in close interdependence on many fronts without excessive conflict.

Highlight (Yellow) | Page 89

None of these situations involves participants who vary greatly in regard to ownership of assets, skills, knowledge, ethnicity, race, or other variables that could strongly divide a group of individuals (R.

Highlight (Yellow) | Page 89

explain their sustainability and robustness, given how difficult it must have been to achieve this record in such complex, uncertain, and interdependent environments in which individuals have continuously faced substantial incentives to behave opportunistically.



Highlight (Yellow) | Page 89

part of the explanation that I offer is based on the fact that the particular rules differ. The differences in the particular rules take into account specific attributes of the related physical systems, cultural views of the world, and economic and political relationships that exist in the setting.

---

Highlight (Yellow) | Page 90

1. Clearly defined boundaries

---

Highlight (Yellow) | Page 90

2. Congruence between appropriation and provision rules and local conditions

---

Highlight (Yellow) | Page 90

3. Collective-choice arrangements

---

Highlight (Yellow) | Page 90

4. Monitoring

---

Highlight (Yellow) | Page 90

5. Graduated sanctions

---

Highlight (Yellow) | Page 90

6. Conflict-resolution mechanisms

---

Highlight (Yellow) | Page 90

7. Minimal recognition of rights to organize

---

Highlight (Yellow) | Page 91

8. Nested enterprises

---

Highlight (Yellow) | Page 91

local appropriators face the risk that any benefits they produce by their efforts will be reaped by others who have not contributed to those efforts.

---

Highlight (Yellow) | Page 91

The higher the discount rate, the closer the situation is to that of a one-shot dilemma in which the dominant strategy of all participants is to overuse the CPR.

---

Highlight (Yellow) | Page 91

“common-property” institutions as contrasted to “open-access”

---

Highlight (Yellow) | Page 93

individuals who directly interact with one another and with the physical world can modify the rules over time so as to better fit them to the specific characteristics of their setting.

---

Highlight (Yellow) | Page 93

should be able to devise a good set of rules if they keep the costs of changing the rules relatively low.

---

Highlight (Yellow) | Page 93

Actually following rules ex post, when strong temptations arise, is the significant accomplishment.

---

Highlight (Yellow) | Page 94

In these robust institutions, monitoring and sanctioning are undertaken not by external authorities but by the participants themselves. The initial sanctions used in these systems are also surprisingly low.

---

Highlight (Yellow) | Page 94

somehow have overcome the presumed problem of the second-order dilemma.

---

Highlight (Yellow) | Page 94

“quasi-voluntary compliance”

---

Highlight (Yellow) | Page 94

voluntary in the sense that individuals choose to comply in many situations in which they are not being directly coerced.

---

Highlight (Yellow) | Page 94

noncompliant are subject to coercion – if they are caught”

---

Highlight (Yellow) | Page 94

Strategic actors are willing to comply with a set of rules, Levi argues, when (1) they perceive that the collective objective is achieved, and (2) they perceive that others also comply.

---

Highlight (Yellow) | Page 94

Levi, on the other hand, views coercion as an essential condition to achieve quasi-voluntary compliance as a form of contingent behavior. In her theory, enforcement increases the confidence of individuals that they are not suckers.

---

Highlight (Yellow) | Page 95

“punishment almost invariably is costly to the punisher, while the benefits from punishment are diffusely distributed over the members.”

---

Highlight (Yellow) | Page 95

The costs of monitoring are low in many long-enduring CPRs as a result of the rules in use.

---

Highlight (Yellow) | Page 95

Monitoring is a by-product of their own strong motivations to use their water rotation turns to the fullest extent.

---

Highlight (Yellow) | Page 96

monitoring is a natural by-product of using the commons.

---

Highlight (Yellow) | Page 96

Because the appropriators tend to continue monitoring the guards, as well as each other, some redundancy is built into the monitoring and sanctioning system.

---

Highlight (Yellow) | Page 98

A large monetary fine imposed on a person facing an unusual problem may produce resentment and unwillingness to conform to the rules in the future.

---

Highlight (Yellow) | Page 100

In field settings, applying the rules is never unambiguous,

---

Highlight (Yellow) | Page 101

such mechanisms sometimes are quite informal,

---

Highlight (Yellow) | Page 101

those who are selected as leaders are also the basic resolvers of conflict.

---

Highlight (Yellow) | Page 101

the potential for conflict over a very scarce resource is so high that well-developed court mechanisms have been in place for centuries.

---

Highlight (Yellow) | Page 101

In a situation in which one wishes to get around the rules created by the fishers, one may go to the external government and try to get local rules overturned.

---

Highlight (Yellow) | Page 103

the origins of these systems are lost in time.

---

Highlight (Yellow) | Page 103

the presence of collective benefits as a result of designing new institutions is itself a second-order collective dilemma.

---

Highlight (Yellow) | Page 103

proposed new institution “is subject to the very incentive problems it is supposed to resolve”

---

Highlight (Yellow) | Page 110

The solutions to the pumping race, however were not imposed on the participants by external authorities.

---

Highlight (Yellow) | Page 110

the participants used public arenas to impose constraints on themselves.

---

Highlight (Yellow) | Page 112

The parties then shared a single, authoritative “image” of the problem they faced.

---

Highlight (Yellow) | Page 113

The signatory parties agreed to share the cutback proportionately instead of pursuing further legal procedures to determine whose rights took precedence.

---

Highlight (Yellow) | Page 113

They further guaranteed each other's proportional shares of the safe yield (if it were to change in the future) and established an arrangement to enable those most adversely affected by the cutback to obtain exchange rights from others willing to sell their rights on an annual basis.

---

Highlight (Yellow) | Page 117

the default rule had been changed by the initiation of litigation.

---

Highlight (Yellow) | Page 118

If the water producers were unable to arrive at their own settlement, they could expect the court to order a two-thirds cutback.

---

Highlight (Yellow) | Page 125

the level of infractions has been insignificant

---

Highlight (Yellow) | Page 125

The watermaster in each basin has extensive monitoring and sanctioning authority.

---

Highlight (Yellow) | Page 125

Monitoring activities are obvious and public.

---

Highlight (Yellow) | Page 125

Several agencies crosscheck the records.

---

Highlight (Yellow) | Page 125

each pumper knows what everyone else is doing,

---

Highlight (Yellow) | Page 125

the information available to the parties closely approximates "common knowledge,

---

Highlight (Yellow) | Page 125

watermaster service tries to be a neutral, monitoring agency.

---

Highlight (Yellow) | Page 126

stay as neutral as possible in order to gain as much voluntary cooperation as possible.

---

Highlight (Yellow) | Page 126

It has been necessary, however, to initiate legal action against new pumpers who have attempted to withdraw groundwater without first purchasing water rights.

---

Highlight (Yellow) | Page 126

Because a pumper is constrained, and almost all pumpers voluntarily agreed to the initial allocation of rights, the basic system is perceived to be fair by most participants. Further, participants continue to have control over the monitoring system to ensure that it continues to be active, fair, and reliable.

---

Highlight (Yellow) | Page 127

how public entrepreneurship can be used as a strategy to transform the structure of incentives facing those jointly using a CPR.

---

Highlight (Yellow) | Page 137

If pumpers will not limit their groundwater production, why should they invest in the provision of new institutions?

---

Highlight (Yellow) | Page 137

simply a second-order dilemma that is no more solvable than the first-order dilemma.

---

Highlight (Yellow) | Page 137

Incremental, sequential, and self-transforming institutional change in a facilitative political regime

---

Highlight (Yellow) | Page 137

Rarely was it necessary for participants to move simultaneously without knowing what others were doing.

---

Highlight (Yellow) | Page 137

Because the process was incremental and sequential and early successes were achieved, intermediate benefits from the initial investments were realized before anyone needed to make larger investments.

---

Highlight (Yellow) | Page 137

Each institutional change transformed the structure of incentives within which future strategic decisions would be made.

---

Highlight (Yellow) | Page 138

participants in one setting could learn from the experiences of those in similar settings.

---

Highlight (Yellow) | Page 138

Sufficient overlap existed among participants across basins to ensure communication about results.

---

Highlight (Yellow) | Page 138

Interbasin coordinating arenas were created at several junctures to enhance the ability to exchange information about agreements reached within and across basin boundaries.

---

Highlight (Yellow) | Page 138

forum for face-to-face discussions about joint problems and potential joint strategies.

---

Highlight (Yellow) | Page 138

attorneys advising water companies and public utilities had consistently advised their clients to pump as much water as they could profitably use and worry about defending their water rights later.

---

Highlight (Yellow) | Page 138

discussion did lead to the initiation of litigation, which enabled the participants to reach an enforceable agreement

---

Highlight (Yellow) | Page 138

the voluntary associations provided a mechanism for obtaining information about the physical structure of the basins to be made available to all pumpers simultaneously.

---

Highlight (Yellow) | Page 138

The private associations provided a mechanism for sharing the costs and the results of expensive technical studies.

---

Highlight (Yellow) | Page 138

participants learned that it was possible to accomplish some joint objectives by voluntary, cooperative action.

---

Highlight (Yellow) | Page 138

membership dues for the associations were modest and were allocated in rough proportion to the amount of water an enterprise withdrew from a basin.

---

Highlight (Yellow) | Page 138

the state of California provides facilities that help reduce the level of those costs.

---

Highlight (Yellow) | Page 138

Maintaining a court system

---

Highlight (Yellow) | Page 138

subsidizes one-third of the cost of such litigation in order to encourage full exploitation of water resources and settle disputes over water rights when necessary.

---

Highlight (Yellow) | Page 139

technical assistance

---

Highlight (Yellow) | Page 139

The general home-rule tradition that is built into the state constitution and legislative practices

---

Highlight (Yellow) | Page 139

organic laws frequently are passed with close to unanimous support.

---

Highlight (Yellow) | Page 140

Is this action or outcome (or its negation) required? (2) Is this action or outcome (or its negation) forbidden?  
Any action or outcome (or its negation) that is not required nor forbidden is permitted.

---

Highlight (Yellow) | Page 140

origin is characterized as a situation in which individuals move from having no rules to having a set of rules.

---

Highlight (Yellow) | Page 140

whereas institutional change is viewed as involving incremental changes in existing rules.

---



Highlight (Yellow) | Page 140

Both origins and changes in institutions can be analyzed using the same theory when both are viewed as alterations of at least one status quo rule.

---

Highlight (Yellow) | Page 141

Whether or not it will be costly to achieve any institutional change will depend on many variables

---

Highlight (Yellow) | Page 141

not simply on whether or not a new institutional arrangement is being created.

---

Highlight (Yellow) | Page 141

Each institutional change became the foundation for the next change.

---

Highlight (Yellow) | Page 141

Solving some initial second-and third-order problems can help participants move toward solving first-order problems,

---

Highlight (Yellow) | Page 144

the government of Turkey had encouraged some Bodrum fishers to construct larger trawling vessels and “had rarely enforced the three-mile limit, much to the anger of the small fishermen

---

Highlight (Yellow) | Page 145

A local fishing cooperative struggled unsuccessfully during the 1970s to mediate the conflicts among the small-boat fishers, the new entrants, and the trawlers. That cooperative had disappeared by 1983.

---

Highlight (Yellow) | Page 145

overcapitalized fishery, with too many fishers chasing too few fish.

---

Highlight (Yellow) | Page 145

the opportunities for quick economic gain, the large number of fishers, the internal division of the fishers into distinct subgroups with conflicting interests, and the lack of an overarching institutional mechanism in which local rules and conflict-resolution mechanisms could be designed.

---

Highlight (Yellow) | Page 145

Two large fishing cooperatives

---

Highlight (Yellow) | Page 145

there were “no operational rules in place to allocate the fish, to reduce the conflicts, or to limit crowding”

---

Highlight (Yellow) | Page 146

National legislation required fishers to be licensed, but did not limit the number of licenses.

---

Highlight (Yellow) | Page 146

Restrictions were placed on fishing during the spawning season and on the equipment that could be used.

---

Highlight (Yellow) | Page 146

The agency responsible for fishery rules

---

Highlight (Yellow) | Page 146

employed no agents to enforce those rules.

---

Highlight (Yellow) | Page 146

The coast guard, the rural police, and the Ministry of the Interior were

---

Highlight (Yellow) | Page 146

cannot be attributed to a single cause.

---

Highlight (Yellow) | Page 146

severe heterogeneity of interests and of relevant time horizons.

---

Highlight (Yellow) | Page 146

Given the different technologies in use, any rules that were defined to limit use would tend to benefit one subgroup over another, rather than benefit all in a similar manner.

---

Highlight (Yellow) | Page 146

In a political regime that does not provide arenas in which low-cost, enforceable agreements can be reached, it is very difficult to meet the potentially high costs of self-organization.

---

Highlight (Yellow) | Page 146

size and complexity.

---

Highlight (Yellow) | Page 147

The Mojave Water Agency was created, first by state law, and then by a special election in 1960, in order to levy a land tax to pay its share of the capital costs of constructing the aqueduct.

---

Highlight (Yellow) | Page 147

when litigation was initiated in the Superior Court of San Bernardino County, no consensus had developed

---

Highlight (Yellow) | Page 148

approached the situation as if there were only one legitimate answer to each of those questions.

---

Highlight (Yellow) | Page 148

Their view of the issues, however, was not widely shared.

---

Highlight (Yellow) | Page 148

No voluntary water associations were created to facilitate discussion of these issues, and no consensus emerged over time about any of them.

---

Highlight (Yellow) | Page 148

Conflicts emerged between the large and small water pumpers, between advocates for development and advocates for no-growth policies, between industry and agriculture, between locals and “external experts,” and between appointed personnel and elected officials.

---

Highlight (Yellow) | Page 148

suspension of the litigation

---

Highlight (Yellow) | Page 149

No action has since been taken to limit groundwater pumping.

---

Highlight (Yellow) | Page 149

individuals in the Mojave area were able to initiate major changes in institutional arrangements. The changes they made, however, did not give them effective tools for dealing simultaneously with the diversity of problems involved.

---

Highlight (Yellow) | Page 149

Individuals who do not have similar images of the problems they face, who do not work out mechanisms to disaggregate complex problems into subparts, and who do not recognize the legitimacy of diverse interests are unlikely to solve their problems even when the institutional means to do so are available to them.

---

Highlight (Yellow) | Page 150

there is room for only two nets to be used simultaneously.

---

Highlight (Yellow) | Page 150

If the Mawelle fishers owned only 20 to 30 nets, they could make optimal use of most of their nets;

---

Highlight (Yellow) | Page 150

however, they own 100 beach seines, and the average net was in use only seven times during 1971

---

Highlight (Yellow) | Page 150

Mawelle had devised quite elaborate rules regulating access to the beach and the use of the beach seines, but they were not able to sustain an entry rule controlling the number of nets to be used.

---

Highlight (Yellow) | Page 150

When some of the fishers tried to get officials to enforce a provision in the national legislation that limited the number of nets to be used, others were able to convince national public officials not to enforce that provision.

---

Highlight (Yellow) | Page 151

Disputes about this sequencing are rare, except when the rules themselves are challenged,

---

Highlight (Yellow) | Page 151

The rotation system evolved in an era in which the number of nets varied around 20.

---

Highlight (Yellow) | Page 151

the system produced relatively equal and profitable incomes for all net owners.

---

Highlight (Yellow) | Page 151

The population of Mawelle grew by 70% between 1901 and 1931, with a disproportionate amount of the growth occurring among beach-seining families

---

Highlight (Yellow) | Page 153

In 1933, legislation was enacted requiring the registration of beach-seines throughout the country.

---

Highlight (Yellow) | Page 153

Thirty-two nets were registered in 1933. The registry reveals that almost all fishers owned a single share in one net.

---

Highlight (Yellow) | Page 153

the limit on nets was not enforced,

---

Highlight (Yellow) | Page 153

greatly increased the demand for and market value of fresh fish.

---

Highlight (Yellow) | Page 153

the pressure to introduce new nets really gained momentum. By 1945, 71 nets were in operation.

---

Highlight (Yellow) | Page 153

New entrepreneurs began to buy shares in more than one net and to hire wage laborers to work their shares.

---

Highlight (Yellow) | Page 153

By purchasing shares in nets well separated in the sequence, profitable returns could be made during each year. On the other hand, a poor fisher, who owned only a single share, received a profit only in those years when his net operated during the limited flush season. In earlier times, everyone had operated a net during the high-yield season.

---

Highlight (Yellow) | Page 153

that occurred, on the average, every three years. In the other two years, the income earned from a single share was less than a subsistence-level income.

---

Highlight (Yellow) | Page 154

Poorer owners of single shares began to sell their shares to others.

---

Highlight (Yellow) | Page 154

the ownership patterns were shifting at the same time that the number of nets was greatly increasing.

---

Highlight (Yellow) | Page 154

the government agent, who agreed that the number of nets to be used in the future would be limited to the 77 nets then registered

---

Highlight (Yellow) | Page 154

Finding it difficult to buy shares in current nets, Mahattea approached the local member of parliament (MP), a member of the Sri Lankan Freedom Party, and argued for permission to construct additional nets.

---

Highlight (Yellow) | Page 155

24 new nets were constructed and added to the 84 nets then in operation.

---

Highlight (Yellow) | Page 155

net 1 and net 85 were launched at the same time, and fishers engaged in a brawl at sea.

---

Highlight (Yellow) | Page 155

The police stayed on for weeks to ensure that the 24 new nets were added to the sequence.

---

Highlight (Yellow) | Page 155

The national government then issued regulations freezing the number of nets at 108.

---

Highlight (Yellow) | Page 155

nets in use had dropped to 99 because of the burning of some nets in interfactional conflicts.

---

Highlight (Yellow) | Page 155

what happens in a dynamic local setting when appropriators do not have autonomy to make and enforce new rules.

---

Highlight (Yellow) | Page 156

The villagers' own rotation system was codified in 1933, prior to the dramatic economic changes that would alter the incentives for all participants, and the villagers lost their right to change their own rules to adjust to the rapid change in the value of fish.

---

Highlight (Yellow) | Page 157

Private ownership may have been the only viable institutional arrangement along this coast, not because it was "the only way" but because the external regime was unwilling to allow local rule determination and enforcement.

---

Highlight (Yellow) | Page 158

In few of these projects has the amount of land actually irrigated approached the projections.

---

Highlight (Yellow) | Page 158

Much of the land that the planners presumed would produce two crops per year produced only a single crop after project water was made available.

---

Highlight (Yellow) | Page 158

Farmers are strongly motivated to irrigate their fields as often as possible during the growing season.

---

Highlight (Yellow) | Page 158

Keeping fields flooded for long periods of time reduces the amount of backbreaking weeding that a farmer must do.

---

Highlight (Yellow) | Page 158

A farmer has every reason to take almost any quantity of water that can be obtained through legal or illegal means, and very little reason to conserve water at all.

---

Highlight (Yellow) | Page 158

Farmers are rarely required to pay the full costs or even any costs

---

Highlight (Yellow) | Page 158

if farmers are able to follow their own unconstrained preferences, they will apply far more water than is economically justified, in order to reduce their own personal labor input (even in areas where there is an abundance of labor), with the result that the total agricultural yield of the-system will be substantially less than the projections made by irrigation engineers based on formulas of "optimal water-usage patterns."

---

Highlight (Yellow) | Page 159

Bringing water use close to the figures used in project-planning documents would require a high level of organization by the farmers themselves to allocate water in the channels serving their fields according to strict self-discipline.

---

Highlight (Yellow) | Page 159

Central-government efforts to achieve such a level of organization have not changed the fundamental incentives facing participants or their behavior.

---

Highlight (Yellow) | Page 159

The dominant pattern of their behavior is to take as much water as their paddy fields will hold whenever they can legally or illegally obtain it and to refrain from active participation in efforts that would require them to accept any limits on their water use.

---

Highlight (Yellow) | Page 159

upstream irrigators seriously harm the downstream irrigators, but the general lack of reliable rules greatly increases the production and transactions costs for all irrigators.

---

Highlight (Yellow) | Page 161

“In theory the Vel Vidanes were the instrument of swift discipline, empowered to ensure water conservation by the application of a code which laid down automatic punishments for any practices which would waste water, such as poor levelling of fields”

---

Highlight (Yellow) | Page 161

Some vel vidanes were subject “to influence by the big land controllers, so that performance of their duties was often slack and subject to bias”

---

Highlight (Yellow) | Page 161

Water shortages occurred rather frequently. Considerable conflict was engendered between the Revenue Department, which wanted to save crops, and the Irrigation Department, which wanted a regular schedule and a set time to maintain the bund and channels.

---

Highlight (Yellow) | Page 162

The vel vidanes were replaced by the administrative secretaries (govimandala sewakas)

---

Highlight (Yellow) | Page 162

Initially, the “water meetings” held in each tract were attended by all registered cultivators, instead of just the owners of land, and elected a Cultivation Committee for a period of three years.

---

Highlight (Yellow) | Page 162

Each Cultivation Committee met separately to set its own cultivation dates for each cultivation season of the year.<sup>14</sup> That arrangement greatly enhanced the flexibility of the system, but reduced the level of coordination across irrigation canals

---



Highlight (Yellow) | Page 162

The administrative secretary was responsible for enforcing compliance with the rules for water use, but he had fewer enforcement powers than had the vel vidanes.

---

Highlight (Yellow) | Page 163

was paid from a fixed cash assessment levied per acre of land in each tract,

---

Highlight (Yellow) | Page 163

he was dependent on satisfying farmers in his unit, to some extent, or he could not be reelected.

---

Highlight (Yellow) | Page 163

Large landowners frequently captured the major positions on some of the Cultivation Committees for Kirindi Oya and obtained special privileges

---

Highlight (Yellow) | Page 163

hardly a sufficient work force to supervise

---

Highlight (Yellow) | Page 163

Disputes among irrigators were sometimes resolved in a violent manner.

---

Highlight (Yellow) | Page 163

control over water theft was “virtually nonexistent.”

---

Highlight (Yellow) | Page 164

The Cultivation Committees were abolished altogether in 1977, and their functions were given to appointed cultivation officers,

---

Highlight (Yellow) | Page 164

entirely centralized system.

---

Highlight (Yellow) | Page 164

Irrigation engineers strongly identify with the civil-engineering profession, in which esteem derives largely from designing and constructing public works, rather than operating and maintaining them.

---

Highlight (Yellow) | Page 165

overworked and underpaid.

---

Highlight (Yellow) | Page 165

Many settlements are heterogeneous, composed of individuals coming from different regions, castes, and kinship groupings, all of whom are initially poor and dependent on the irrigation projects for housing, initial income supplements, and provision of social services.

---

Highlight (Yellow) | Page 166

It makes little economic sense for a developing country with an underutilized labor supply to subsidize expensive irrigation water and have it allocated in this fashion.

---

Highlight (Yellow) | Page 166

Among the internal factors,

---

Highlight (Yellow) | Page 166

1 the very large number of farmers involved,

---

Highlight (Yellow) | Page 166

2 the fact that most farmers are poor settlers who have recently been recruited to the project and have little attachment to their land or to one another,

---

Highlight (Yellow) | Page 166

3 the extreme diversity of ethnic and cultural backgrounds,

---

Highlight (Yellow) | Page 166

4 the opportunity for wealthier farmers to control water through illegal or questionable strategies

---

Highlight (Yellow) | Page 166

(potential leaders thus being able to take care of themselves without having to exert leadership to solve larger communal problems),

---

Highlight (Yellow) | Page 166

5 the lack of physical control structures in the irrigation system itself.

---

Highlight (Yellow) | Page 168

introduce “catalysts” into the situation of mutual distrust and unpredictability

---

Highlight (Yellow) | Page 168

institutional organizers

---

Highlight (Yellow) | Page 168

college graduates,

---

Highlight (Yellow) | Page 168

IOs received about six weeks of training in how to approach and motivate farmers and in technical subjects related to agriculture and irrigation.

---

Highlight (Yellow) | Page 168

met weekly in order to learn from each other’s experiences and bolster morale when necessary.

---

Highlight (Yellow) | Page 168

expected, first, to meet each farmer sharing water from a field canal to discuss the types of agricultural and irrigation problems they faced and to complete a survey of relevant information about the area.

---

Highlight (Yellow) | Page 168

meet informally with small groups of farmers sharing the same field channel to plan self-help strategies.

---

Highlight (Yellow) | Page 168

working committee to solve particular problems,

---

Highlight (Yellow) | Page 168

IOs identified problems beyond those that could be solved by the farmers working together,

---

Highlight (Yellow) | Page 168

Once farmers were used to working together and had achieved benefits from group action, the IO would then help form a local organization and select, through consensus, a farmer representative.

---

Highlight (Yellow) | Page 169

convince the engineers that high levels of labor contribution were far more likely if the farmers were consulted during the design stages of the rehabilitation.

---

Highlight (Yellow) | Page 169

FCOs were problem-solving units that operated often without regular meeting times, agendas, or written records.

---

Highlight (Yellow) | Page 169

on top of the FCO at the level of the distributory channel, the “distributory channel organization” (DCO),

---

Highlight (Yellow) | Page 169

The third tier of organization, at the branch-canal or area level,

---

Highlight (Yellow) | Page 169

The fourth tier of organization – a project-level committee – was initiated by the farmer-representatives and the IOs.

---

Highlight (Yellow) | Page 171

farmers were expected to undertake construction at the field-channel level without pay.

---

Highlight (Yellow) | Page 171

Somewhere between 30% and 60% of the field channels were completed

---

Highlight (Yellow) | Page 171

They faced high turnover (95%) among the IOs,

---

Highlight (Yellow) | Page 171

Some IOs were fielded with inadequate training.

---

Highlight (Yellow) | Page 171

the modest cost of the program was more than offset by the increased yields resulting from successful introduction of water rotation procedures (Perera

---

Highlight (Yellow) | Page 172

the project has left organizations in place that can continue to develop new skills and new problem-solving abilities.

---

Highlight (Yellow) | Page 172

Given the perverse incentives

---

Highlight (Yellow) | Page 172

it seems unlikely that the farmers or the officials by themselves would have overcome the structure of the situations they faced without external intervention.

---

Highlight (Yellow) | Page 172

not that of a central agency regimenting the farmers by enforcing rules designed by others,

---

Highlight (Yellow) | Page 172

Farmer-representatives were selected through consensus, rather than having “leaders” elected by majority vote.

---

Highlight (Yellow) | Page 172

Consensus was the dominant rule used in making decisions at all tiers.

---

Highlight (Yellow) | Page 172

day-to-day problem-solving regarding irrigation and agricultural problems could be taken away from politicized channels

---

Highlight (Yellow) | Page 172

Mutual trust and reciprocity were nourished on a face-to-face basis prior to attempts to organize farmers into larger groups.

---

Highlight (Yellow) | Page 172

farmers were organized on four mutually reinforcing levels and were given recognition and encouragement.

---

Highlight (Yellow) | Page 172

their own proposals were treated seriously,

---

Highlight (Yellow) | Page 172

Such problems may be intractable from “inside”

---

Highlight (Yellow) | Page 172

The amount of external intervention need not be large nor expensive.

---

Highlight (Yellow) | Page 173

Nor is it necessary to maintain large numbers of catalysts in the field for a long time.

---

Highlight (Yellow) | Page 173

fragile CPR institutions.

---

Highlight (Yellow) | Page 173

Nova Scotia

---

Highlight (Yellow) | Page 173

have developed their own rules governing the use of nearby fisheries.

---

Highlight (Yellow) | Page 174

Most of the fishing villages along the southwestern coast of Nova Scotia have broadly defined fishing territories.

---

Highlight (Yellow) | Page 174

The territory used primarily by Port Lameron fishers is divided into several subzones, each devoted to a particular type of technology.

---

Highlight (Yellow) | Page 174

divided their territory on pragmatic grounds:

---

Highlight (Yellow) | Page 174

reduces the externalities that the use of one technology may impose on others

---

Highlight (Yellow) | Page 174

also constitutes a low-cost system for apportioning a reasonable yield to all participants.

---

Highlight (Yellow) | Page 174

The cost of monitoring an apportioning scheme based on an easily observable factor – what technology a boat is using – is much lower than the cost for one based on the quantity of fish harvested.

---

Highlight (Yellow) | Page 175

they exercise the right of first access (and the right to refuse access in years of scarcity) to the remaining zone.

---

Highlight (Yellow) | Page 175

The years of scarcity are, of course, exactly the years when conflict over territory can erupt.

---

Highlight (Yellow) | Page 175

Policing their boundaries is something that all fishers do.

---

Highlight (Yellow) | Page 175

This rule system is fragile because it is not recognized by federal authorities in Canada,

---

Highlight (Yellow) | Page 175

Federal officials presume that the entire eastern coast is an open-access fishery.

---

Highlight (Yellow) | Page 175

They have adopted the dominant policy orientation described in Chapter 1, namely, that there are only two options available: private property rights and government regulation.

---

Highlight (Yellow) | Page 175

The federal government ... carries the jurisdictional responsibility for conserving fisheries resources ... and for allocating the distribution of these resources among competing users. Since the establishment of private-property rights in fishery resources is impracticable in the great majority of cases, the state's responsibility for resource conservation and allocation cannot be delegated.

---

Highlight (Yellow) | Page 176

license fishing vessels,

---

Highlight (Yellow) | Page 176

obtain licenses for technologies they were not using in case they might need them in the future.

---

Highlight (Yellow) | Page 176

When federal officials then froze the number of licenses available, without prior notice, and threatened sanctions against those found using gill nets illegally, conflict exploded in the community:

---

Highlight (Yellow) | Page 176

Protest meetings were held along the entire coast, leading federal officials to back off long enough to allow fishers to obtain herring licenses whether or not they intended to sell herring.

---

Highlight (Yellow) | Page 177

reinforced local feelings that federal officials would tend to act arbitrarily without consultation and devise regulations that were not well tailored to the local circumstance:

---

Highlight (Yellow) | Page 177

What do they know about what we do? Fisheries Officers are only around here now and then. How do they know what's best for us? We've fished here for a long time and we know what's best for our ground. We know what it can take.

---

Highlight (Yellow) | Page 177

it is doubtful that any national agency can ever have the extensive time-and-place information needed to tailor a set of rules to the particulars of local situations.

---

Highlight (Yellow) | Page 178

Nepalese villagers began free riding – systematically overexploiting their forest resources on a large scale. The usual explanations for this free riding are that the villagers felt they had lost control of their forests, and they were distrustful of government control and national resources policy.

---

Highlight (Yellow) | Page 181

The cases discussed in this volume compose a limited set. Further empirical and theoretical work is needed before one can have a high degree of confidence that this set of design principles is the best way to distinguish among robust, fragile, and failed institutions.

---

Highlight (Yellow) | Page 182

no claim is made that institutional arrangements supplied by appropriators, rather than by external authorities, will achieve optimal solutions.

---



Highlight (Yellow) | Page 183

What is needed is further theoretical development that can help identify variables that must be included in any effort to explain and predict when appropriators using smaller-scale CPRs are more likely to self-organize and effectively govern their own CPRs, and when they are more likely to fail.

---

Highlight (Yellow) | Page 183

When individuals who have high discount rates and little mutual trust act independently, without the capacity to communicate, to enter into binding agreements, and to arrange for monitoring and enforcing mechanisms, they are not likely to choose jointly beneficial strategies unless such strategies happen to be their dominant strategies.

---

Highlight (Yellow) | Page 183

They are far less useful for characterizing the behavior of appropriators in the smaller-scale CPRs that are the focus of this inquiry. In such situations, individuals repeatedly communicate and interact with one another in a localized physical setting. Thus, it is possible that they can learn whom to trust, what effects their actions will have on each other and on the CPR, and how to organize themselves to gain benefits and avoid harm.

---

Highlight (Yellow) | Page 184

they possess social capital with which they can build institutional arrangements for resolving CPR dilemmas.

---

Highlight (Yellow) | Page 184

Applying models out of range can produce more harm than good.

---

Highlight (Yellow) | Page 184

Public policies based on the notion that all CPR appropriators are helpless and must have rules imposed on them can destroy institutional capital that has been accumulated during years of experience in particular locations,

---

Highlight (Yellow) | Page 184

We do not learn from these models what individuals will do when they have autonomy to craft their own institutions and can affect each other's norms and perceived benefits.

---

Highlight (Yellow) | Page 185

fallible, norm-adopting individuals who pursue contingent strategies in complex and uncertain environments.

---

Highlight (Yellow) | Page 185

can be expected to make contingent commitments to follow rules

---

Highlight (Yellow) | Page 185

define a set of appropriators who are authorized to use a CPR

---

Highlight (Yellow) | Page 186

relate to the specific attributes of the CPR and the community of appropriators using the CPR

---

Highlight (Yellow) | Page 186

designed, at least in part, by local appropriators

---

Highlight (Yellow) | Page 186

are monitored by individuals accountable to local appropriators

---

Highlight (Yellow) | Page 186

are sanctioned using graduated punishments

---

Highlight (Yellow) | Page 186

a safe, advantageous, and credible commitment can be made.

---

Highlight (Yellow) | Page 186

The commitment is to follow the rules so long as (1) most similarly situated individuals adopt the same commitment and (2) the long-term expected net benefits to be achieved by this strategy are greater than the long-term expected net benefits for individuals following short-term, dominant strategies.

---

Highlight (Yellow) | Page 186

advantageous strategy, because if most individuals follow it, they will be better off than they would be following short-term, dominant strategies.

---

Highlight (Yellow) | Page 186

safe in that individuals following it cannot be exploited for long by others who break their commitments.

---

Highlight (Yellow) | Page 186

Because sanctions are graduated, individuals who commit themselves to a contingent strategy also know that if an emergency were to occur, in which following the rules would be disastrous, an occasional deviation would be subjected to only a small fine or other punishment.

---

Highlight (Yellow) | Page 186

allows appropriators to avoid the high costs that can result from rigid application of uniform rules in a changing and uncertain environment.

---

Highlight (Yellow) | Page 186

Continued rule infractions, however, will lead to an increase in the severity of sanctions.

---

Highlight (Yellow) | Page 187

Where individuals follow rules and engage in mutual monitoring, reinforcing institutional arrangements and individual strategies bolster one another so as to maintain enduring patterns of consistent, but not perfect, rule-following behavior.

---

Highlight (Yellow) | Page 188

Recent efforts to modify the theory of collective action to explain the achievement of collective benefits by individuals acting independently have focused almost entirely on variables that are internal to the situation.

---

Highlight (Yellow) | Page 188

1 the total number of decision makers, 2 the number of participants minimally necessary to achieve the collective benefit, 3 the discount rate in use, 4 similarities of interests, and 5 the presence of participants with substantial leadership or other assets.

---

Highlight (Yellow) | Page 188

These same variables are relevant to an explanation of the supply of institutions,

---

Highlight (Yellow) | Page 188

But several anomalies exist.

---

Highlight (Yellow) | Page 189

larger CPRs

---

Highlight (Yellow) | Page 189

are characterized by design principle 8: the use of nested enterprises.

---

Highlight (Yellow) | Page 189

once the smaller units are organized, the marginal cost of building on that organizational base is substantially less than the cost of starting with no prior base.

---

Highlight (Yellow) | Page 190

take account of how the strategies of external actors affect the costs and benefits of CPR appropriators.

---

Highlight (Yellow) | Page 190

To assume that complete information is freely available and that transactions costs can be ignored does not generate theoretical explanations that can be used in a setting where information is scant, potentially biased, and expensive to obtain and where most transactions are costly.

---

Highlight (Yellow) | Page 191

Current theories do not take into account 1 the need to reflect the incremental, self-transforming nature of institutional change, 2 the importance of the characteristics of external political regimes in an analysis of how internal variables affect levels of collective provision of rules, and 3 the need to include information and transaction costs.

---

Highlight (Yellow) | Page 191

Models that use assumptions such as complete information, independent action, perfect symmetry, no human errors, no norms of acceptable behavior, zero monitoring and enforcement costs, and no capacity to change the structure of the situation itself help the analyst derive precise predictions.

---

Highlight (Yellow) | Page 191

Models that make such assumptions do not, however, direct the attention of the policy analyst to some of the problematic variables of the situation that affect the incentives and behaviors of individuals.

---

Highlight (Yellow) | Page 192

From a framework, one derives the questions that need to be asked to clarify the structure of a situation and the incentives facing individuals.

---

Highlight (Yellow) | Page 192

Once the incentives are clarified, the theorist can analyze a situation and predict likely behavior in terms of choice of strategy and the consequences that are likely to result.

---

Highlight (Yellow) | Page 193

rational action involving four internal variables – expected benefits, expected costs, internalized norms, and discount rates – that affect individual choices of strategies in any situation.

---

Highlight (Yellow) | Page 193

one predicts that individuals will select strategies whose expected benefits will exceed expected costs.

---

Highlight (Yellow) | Page 193

Without knowledge of the situational variables that affect benefits and costs, such a prediction is vacuous.

---

Highlight (Yellow) | Page 194

If the following three conditions are met, the institutional analyst need only ascertain the values of the summary variables to predict individual strategies: 1 Accurate summary measures exist for each summary variable. 2 Individuals completely and accurately translate information about net benefits and net costs into expected benefits and expected costs. 3 Individuals behave in a straightforward, rather than a strategic, manner.

---

Highlight (Yellow) | Page 195

Individuals who are closely involved in such situations can make accurate judgments about the costs and benefits of alternative rules systems, taking into account a variety of monetized and nonmonetized benefits and costs. Individuals located in an administrative center will find it far more difficult to make good judgments about relative benefits and costs of alternative rules, because many of these costs and benefits are not recorded and summarized in the information available to those external to the situation.

---

Highlight (Yellow) | Page 195

If this condition were met, some of the strategic behavior posited to occur in all social dilemmas would disappear.

---

Highlight (Yellow) | Page 195

few field settings are characterized by these three conditions,

---

Highlight (Yellow) | Page 195

one must go beyond the summary variables in analyses intended to be used in policy settings to the situational variables

---

Highlight (Yellow) | Page 195

summary variable “information about net benefits of alternative rules.”

---

Highlight (Yellow) | Page 196

1 What are the predicted average flows and the predicted values of resource units in the future under a proposed set of rules, as compared with the status quo rules? 2 How variable is the flow of resource units expected to be under a proposed set of rules, as compared with the status quo rules? 3 What quality differences will occur under a proposed set of rules, as compared with the status quo rules? 4 How long is the resource itself likely to generate resource units under a proposed set of rules, as compared with the status quo rules? 5 Will conflict be reduced, stay the same, or increase under a proposed set of rules, as compared with the status quo rules?

---

Highlight (Yellow) | Page 196

depend on a number of situational variables, including (1) the number of appropriators, (2) the size of the resource system, (3) the variability of resource units over time and space, (4) the current condition of the resource system, (5) market conditions, (6) the amount and type of conflict that has existed in the past, (7) the availability of recorded data on current conditions and historical appropriation patterns, (8) the particular status quo rules, and (9) the particular proposed rules

---

Highlight (Yellow) | Page 196

The larger the resource system and/or the number of appropriators, and the more unpredictable the flow of resource units and the market prices for these units, the more difficult and costly it is for anyone to obtain accurate information about the condition of the resource itself and the likely value of the flow of resource units under any set of rules. This can be offset, to some extent, if data on resource conditions, resource-unit quality, prices, and appropriation levels are recorded regularly.

---

Highlight (Yellow) | Page 196

The establishment of an official monitor

---

Highlight (Yellow) | Page 197

provides information to appropriators that they would not otherwise obtain, information about appropriation levels and the condition of the resource system itself.

---

Highlight (Yellow) | Page 198

Information about benefits must be searched for, organized, and analyzed.

---

Highlight (Yellow) | Page 198

Transformation costs are the resources devoted to the process of considering a rule change

---

Highlight (Yellow) | Page 198

for example, positively related to the number of individuals making institutional choices, the heterogeneity of interests at stake, and the proportion of individuals minimally necessary to achieve a change in status quo rules

---

Highlight (Yellow) | Page 198

lower when skillful leaders are involved.

---

Highlight (Yellow) | Page 198

not included in the list

---

Highlight (Yellow) | Page 198

type of proposed rule,

---

Highlight (Yellow) | Page 199

Rules are normally changed sequentially.

---

Highlight (Yellow) | Page 199

If appropriators start with low-cost changes, they can gain experience concerning the costs of changing the rules in their setting before attempting changes that will require substantial transformation costs.

---

Highlight (Yellow) | Page 200

The norms that individuals share concerning appropriate strategies when engaging in collective choice will affect transformation costs directly and indirectly.

---

Highlight (Yellow) | Page 200

confrontational strategies, for example, transformation costs rise sharply

---

Highlight (Yellow) | Page 200

The rules instituted at one time will also affect the transformation costs

---

Highlight (Yellow) | Page 200

at a later time.

---

Highlight (Yellow) | Page 200

Whether or not appropriators have substantial autonomy to change their own rules will also affect the costs of transformation.

---

Highlight (Yellow) | Page 205

How individuals weight their own assessments of benefits and costs will depend on the norms that they internalize and the discount rates that they utilize.

---

Highlight (Yellow) | Page 206

Individuals frequently internalize a shared norm, in which case lack of conformity involves both internal psychic and external social costs.

---

Highlight (Yellow) | Page 206

Appropriators who live near the CPR from which they appropriate and who interact with each other in many situations other than the sharing of their CPR are apt to develop strong norms of acceptable behavior and to convey their mutual expectations to one another in many reinforcing encounters

---

Highlight (Yellow) | Page 206

Often the operators of trawlers live elsewhere, belong to different ethnic or racial groups, and share few of the local norms of behavior. They do not drink in the same bars, their families do not live in the nearby fishing villages, and they are not involved in the network of relationships that depend on the establishment of a reputation for keeping promises and accepting the norms of the local community regarding behavior.

---

Highlight (Yellow) | Page 206

Appropriators who are involved in activities that take them away from their CPR and into an economy in which other opportunities exist are most likely to adopt a high discount rate than are appropriators who presume that they and their children are dependent on the local CPR for major economic returns.

---

Highlight (Yellow) | Page 206

Individuals living in a community where disregard for the future is censured by others will have a lower discount rate than will individuals living in a community where no opprobrium is attached to seeking short-term gain in preference to long-term benefit.

---

Highlight (Yellow) | Page 207

CPR situations are rarely as powerful in driving participants – even survivors – toward efficiency as are competitive markets.

---



Highlight (Yellow) | Page 207

Nor is there any single variable, such as market price, that can be used as the foundation for making rational choices in a CPR environment.

---

Highlight (Yellow) | Page 207

The level of uncertainty when selecting new rules is far greater than the level of uncertainty when selecting pricing strategies when demand and supply are fixed.

---

Highlight (Yellow) | Page 208

All human judgment in uncertain and complex environments is subject to several known biases.

---

Highlight (Yellow) | Page 208

Individuals weight, for example, potential losses more heavily than potential gains

---

Highlight (Yellow) | Page 208

One should expect individuals to be willing to adopt new rules that will restrict their appropriation activities when there are clear indicators of resource degradation, generally perceived to be accurate predictors of future harm, or when leaders are able to convince others that a “crisis” is impending.

---

Highlight (Yellow) | Page 209

Individuals are apt to weight recent events more heavily than events more distant in a long history of experience.

---

Highlight (Yellow) | Page 209

One should expect rule changes to be made after a series of relatively bad yields from a CPR, but not to be made after a series of relatively good years.

---

Highlight (Yellow) | Page 209

The rules that are proposed are likely to be in a repertoire of rules already familiar to those who propose them.

---

Highlight (Yellow) | Page 209

Institutional arrangements that encourage communication among individuals facing similar problems, such as regionwide associations, increase the knowledge base about how different rules work in practice.

---

Highlight (Yellow) | Page 210

The wrong lessons can also be learned.

---

Highlight (Yellow) | Page 210

If a current set of rules protects one subset of appropriators, while leaving others exposed to future harm, the two groups will evaluate the status quo rules differently.

---

Highlight (Yellow) | Page 210

Benefits and costs have to be discovered and weighed by individuals using human judgment in highly uncertain and complex situations that are made even more complex to the extent that others behave strategically.

---

Highlight (Yellow) | Page 211

We know that it is possible for individuals to use their capacities for selfreflection, communication, and self-commitment to design new rules to solve CPR problems, but we cannot assert necessity.

---

Highlight (Yellow) | Page 211

if individuals find rules that work relatively well, they may have little motivation to continue the costly process of searching for rules that will work even better.

---

Highlight (Yellow) | Page 211

1 Most appropriators share a common judgment that they will be harmed if they do not adopt an alternative rule.

---

Highlight (Yellow) | Page 211

2 Most appropriators will be affected in similar ways by the proposed rule changes.

---

Highlight (Yellow) | Page 211

3 Most appropriators highly value the continuation activities from this CPR;

---

Highlight (Yellow) | Page 211

4 Appropriators face relatively low information, transformation, and enforcement costs.

---

Highlight (Yellow) | Page 211

5 Most appropriators share generalized norms of reciprocity and trust that can be used as initial social capital.

---

Highlight (Yellow) | Page 211

6 The group appropriating from the CPR is relatively small and stable.

---

Highlight (Yellow) | Page 213

If someone else agrees to pay the costs of supplying new institutions, it is difficult to overcome the temptation to free-ride.

---

Highlight (Yellow) | Page 216

The models that social scientists tend to use for analyzing CPR problems have the perverse effect of supporting increased centralization of political authority.

---

Highlight (Yellow) | Page 216

First, the individuals using CPRs are viewed as if they are capable of short-term maximization, but not of long-term reflection about joint strategies to improve joint outcomes.

---

Highlight (Yellow) | Page 216

Second, these individuals are viewed as if they are in a trap and cannot get out without some external authority imposing a solution.

---

Highlight (Yellow) | Page 216

Third, the institutions that individuals may have established are ignored or rejected as inefficient, without examining how these institutions may help them acquire information, reduce monitoring and enforcement costs, and equitably allocate appropriation rights and provision duties.

---

Highlight (Yellow) | Page 216

Fourth, the solutions presented for “the” government to impose are themselves based on models of idealized markets or idealized states.

---